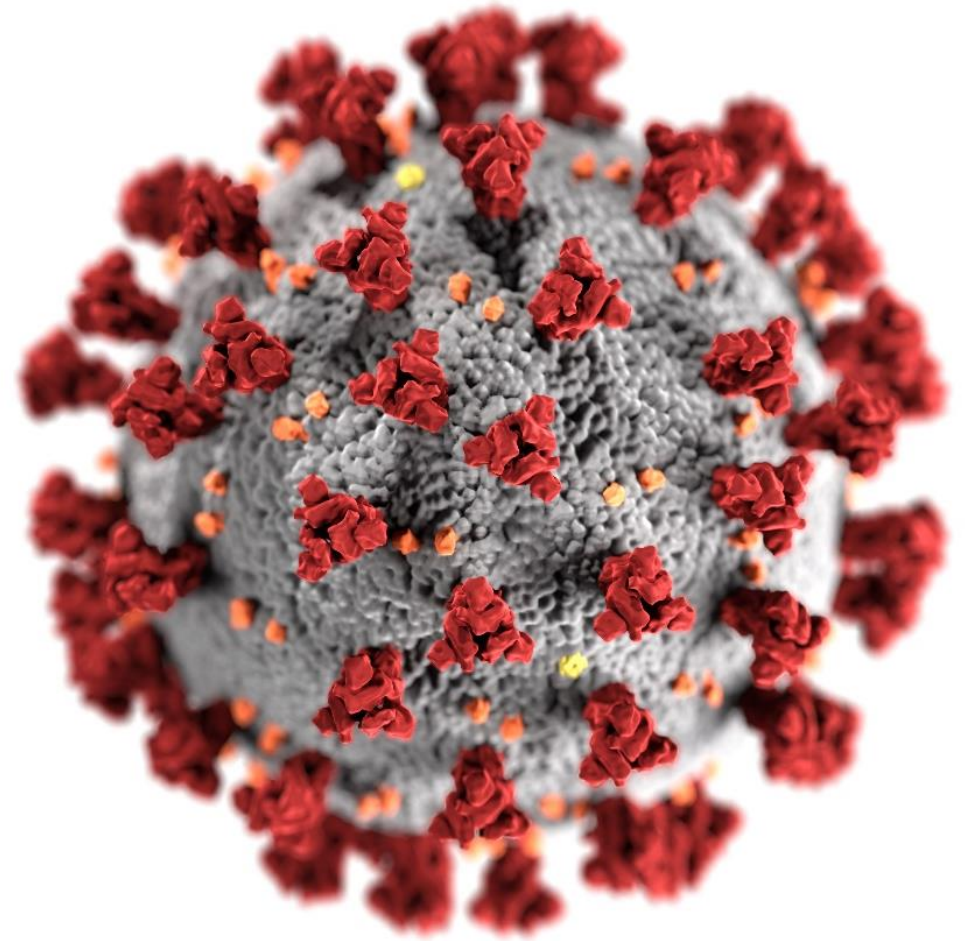


COVID-19 Epidemiology and Vaccination Rates in the United States

Katherine E. Fleming-Dutra, MD
COVID-19 Epidemiology Task Force
Centers for Disease Control and Prevention

July 19, 2022

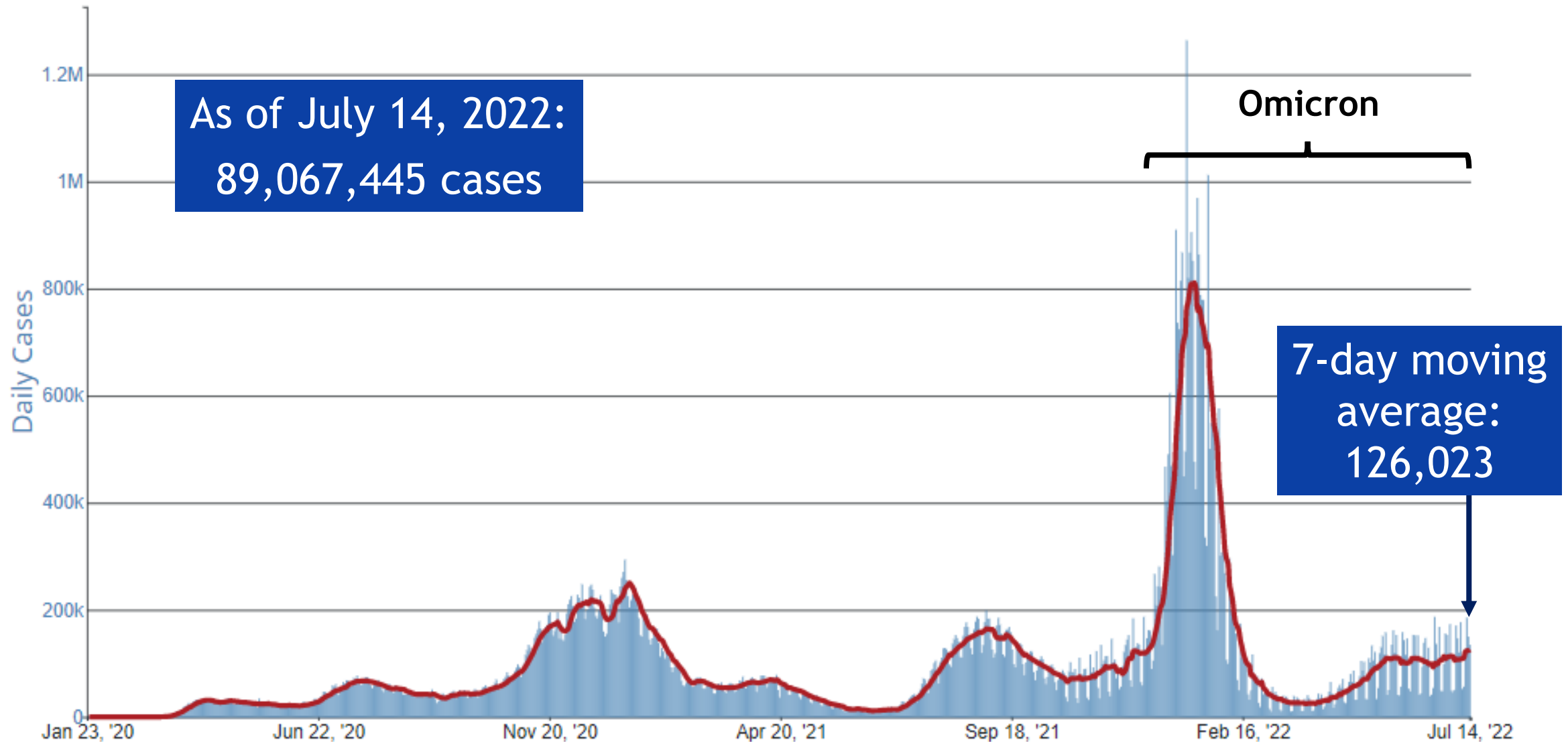


cdc.gov/coronavirus

COVID-19 Cases

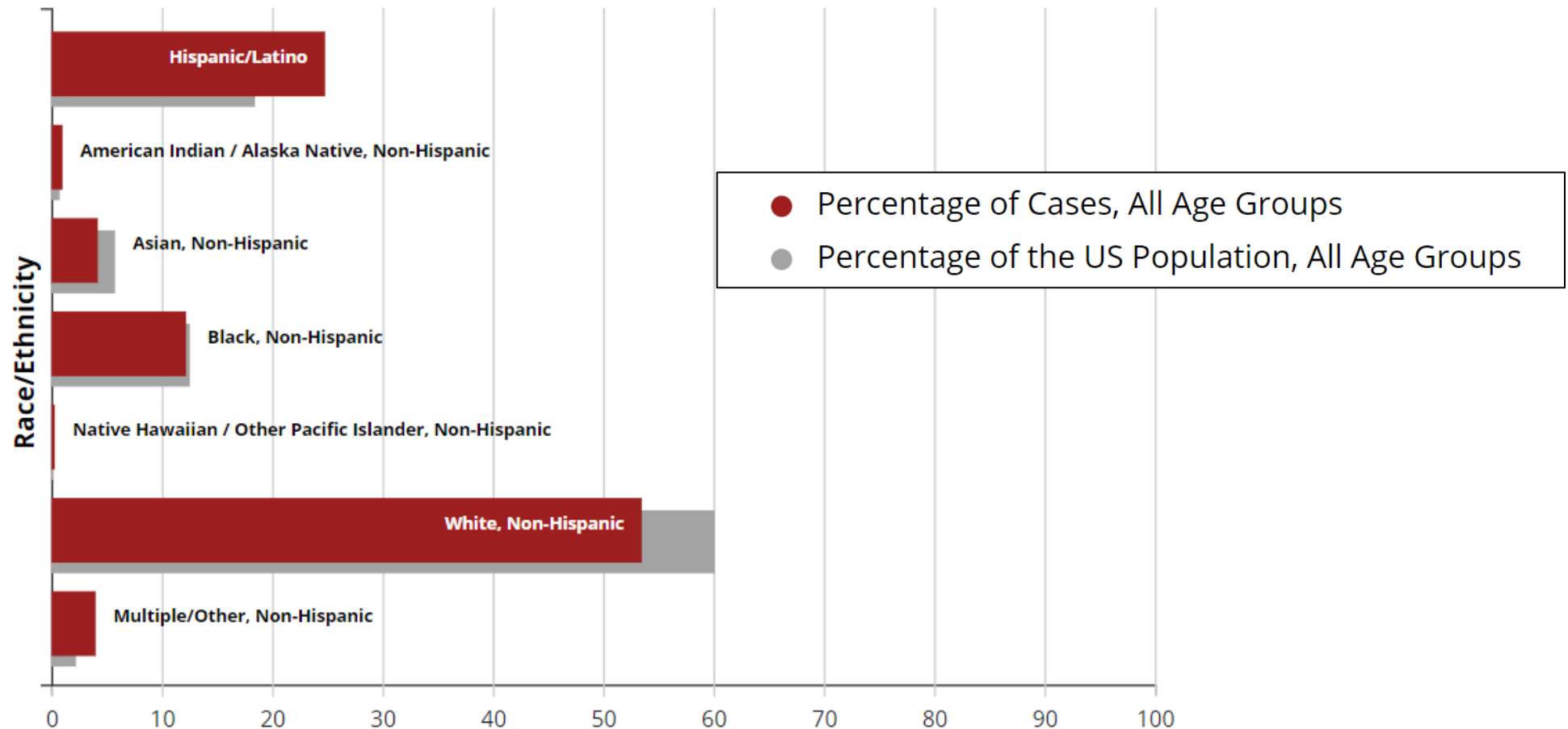


Daily Trends in Number of COVID-19 Cases, United States



CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#trends_dailycases. Accessed July 18, 2022.

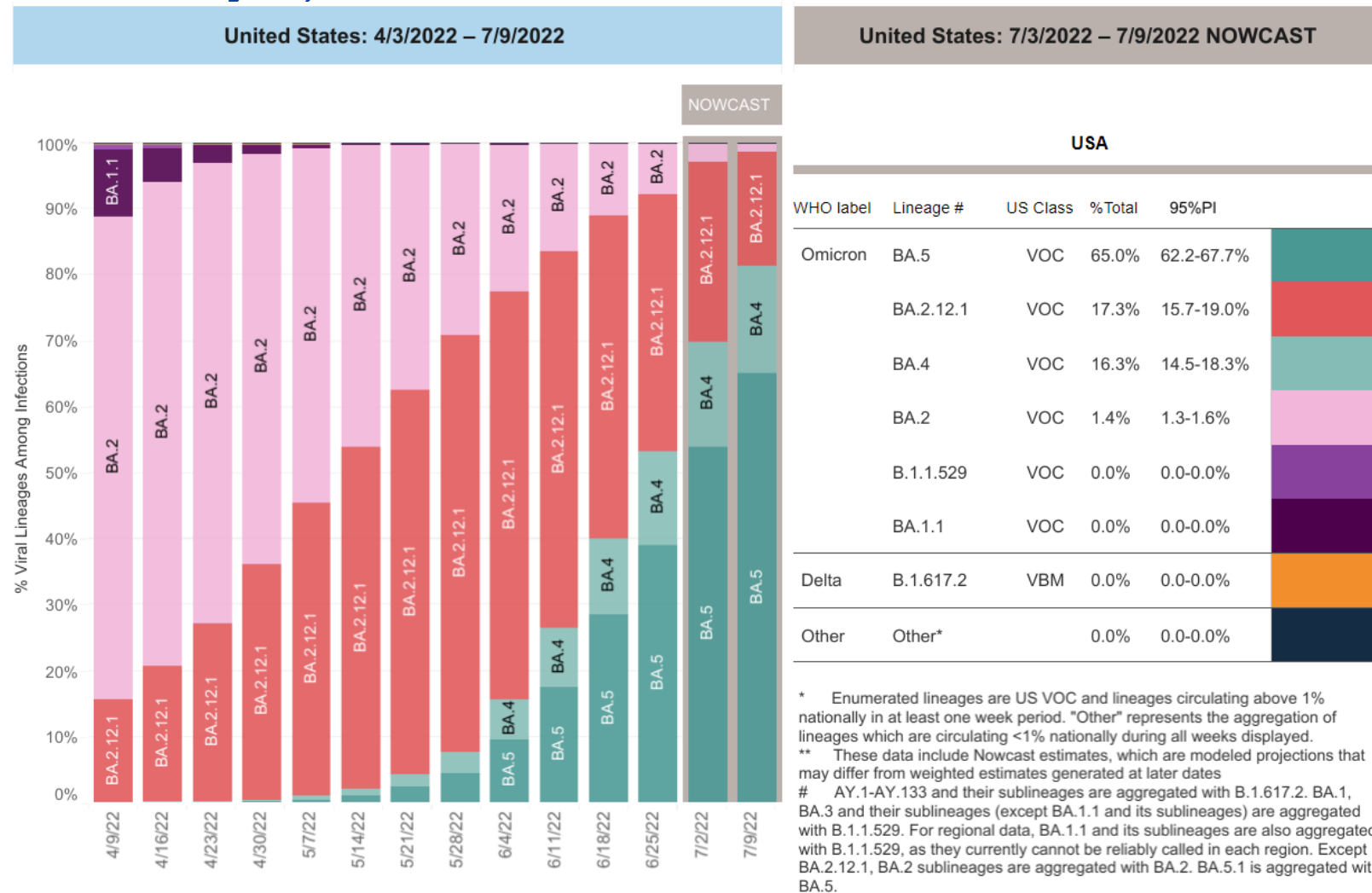
Percent of total COVID-19 cases by race/ethnicity compared to US population, United States, as of July 8, 2022



Data from 80,083,311 cases. Race/Ethnicity was available for 52,460,313 (65%) cases.

Trends in Weighted Variant Proportion Estimates & Nowcast

April 3, 2022-July 9, 2022



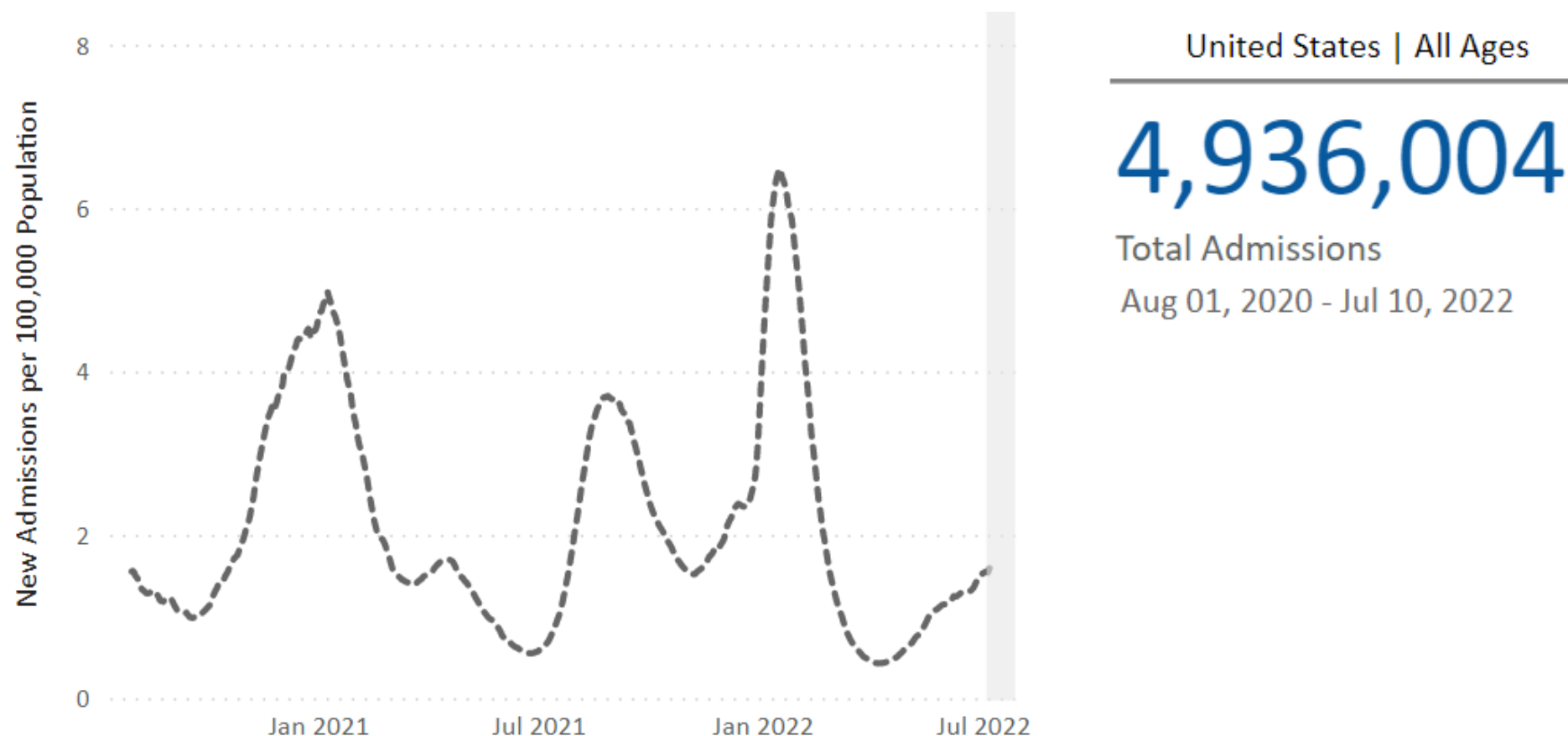
Collection date, week ending

<https://covid.cdc.gov/covid-data-tracker/#variant-proportions>. Accessed July 13, 2022.

COVID-19-Associated Hospitalizations



Weekly Trends in Rates of New Inpatient Admissions among Persons of All Ages, United States, August 1, 2020-July 10, 2022



Based on reporting from all hospitals (N=5,297). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution.

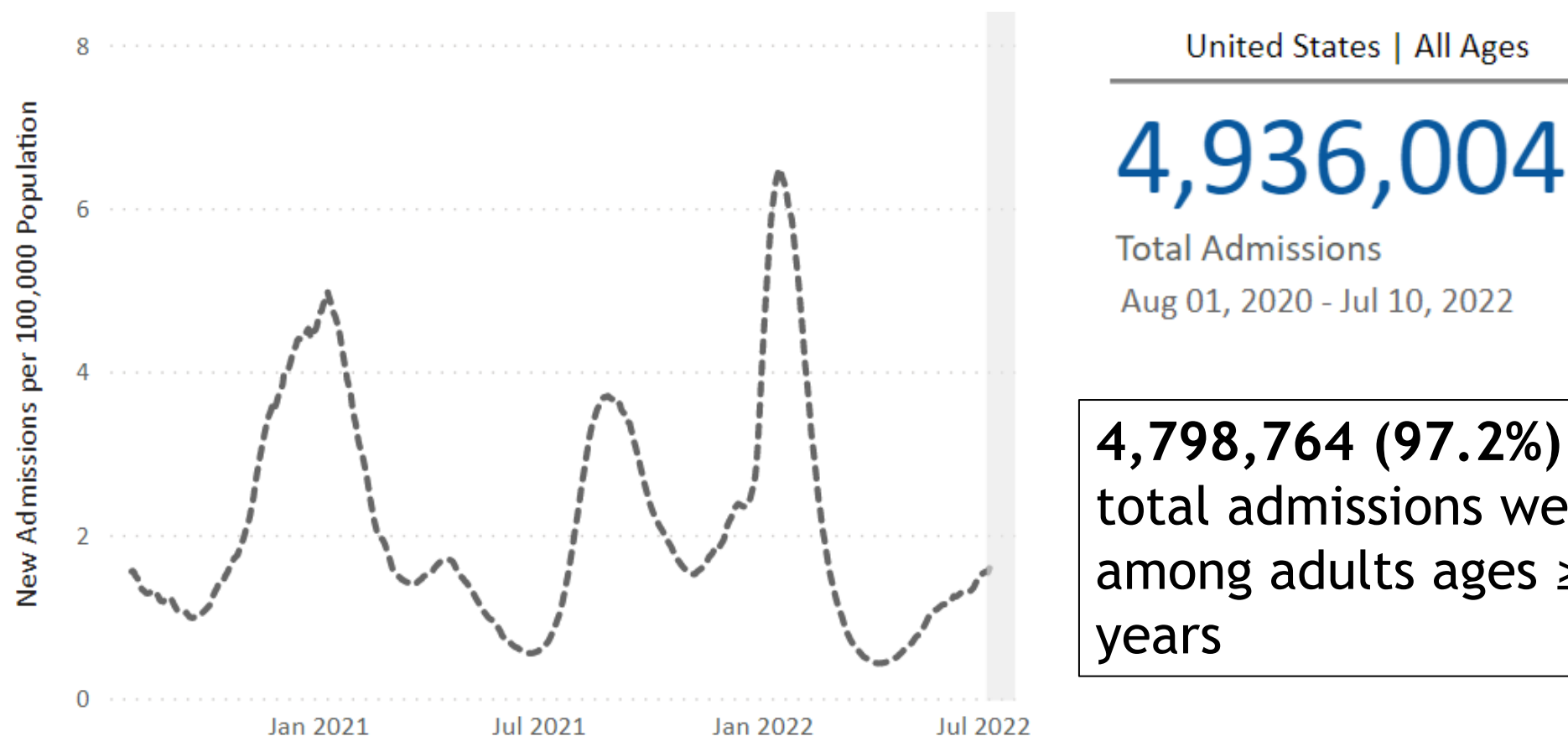
Small shifts in historic data may occur due to changes in the CMS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.

Last Updated: Jul 12, 2022

Unified Hospital Dataset, White House COVID-19 Team, Data Strategy and Execution Workgroup

Unified Hospital Dataset: <https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions>. Accessed July 13, 2022.

Weekly Trends in Rates of New Inpatient Admissions among Persons of All Ages, United States, August 1, 2020-July 10, 2022



Based on reporting from all hospitals (N=5,297). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution.

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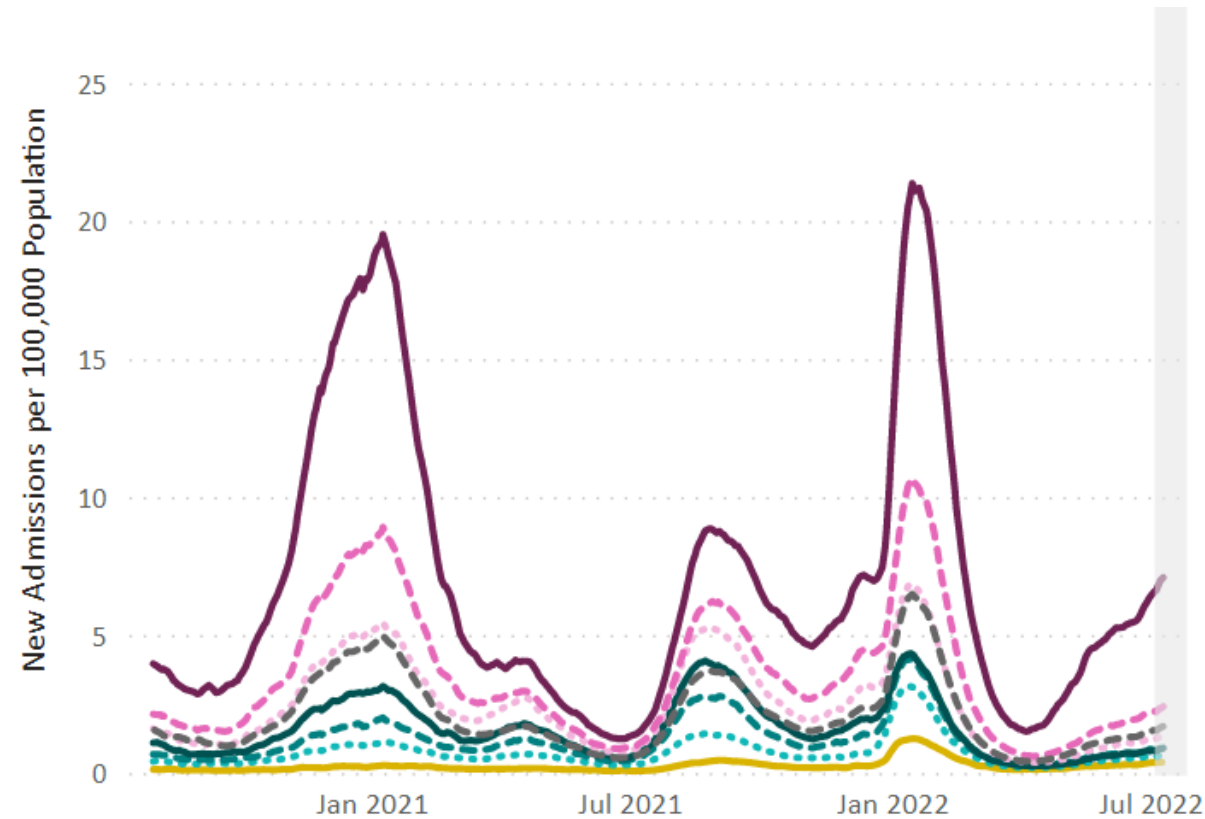
Last Updated: Jul 12, 2022

Unified Hospital Dataset, White House COVID-19 Team, Data Strategy and Execution Workgroup

Unified Hospital Dataset: <https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions>. Accessed July 13, 2022.

Weekly Trends in Rates of New Inpatient Admissions, United States, August 1, 2020-July 10, 2022

Age Group — 0 - 17 Years — 18 - 29 Years — 30 - 39 Years — 40 - 49 Years — 50 - 59 Years — 60 - 69 Years — 70+ Years



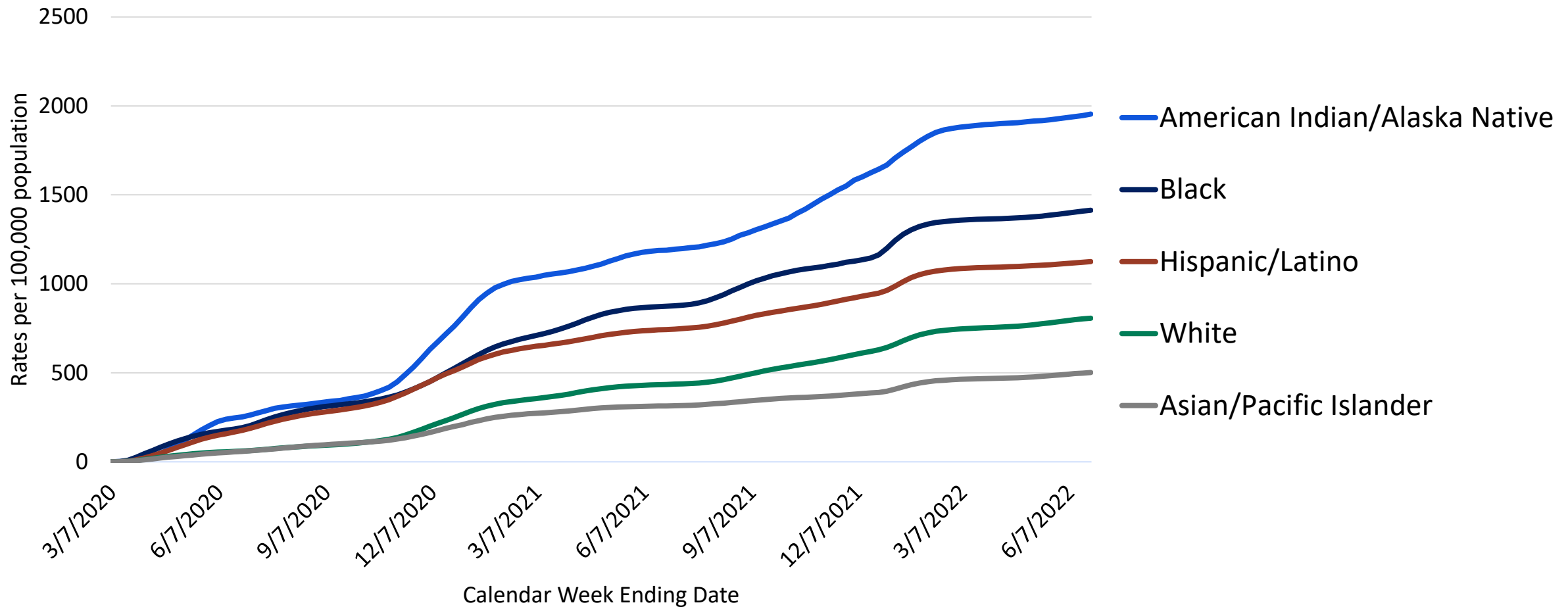
Recent increase in hospitalization rates in older ages relative to other age groups

Based on reporting from all hospitals (N=5,297). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution. Small shifts in historic data may occur due to changes in the CMS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.
Last Updated: Jul 12, 2022

Unified Hospital Dataset, White House COVID-19 Team, Data Strategy and Execution Workgroup

Unified Hospital Dataset: <https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions>. Accessed July 13, 2022.

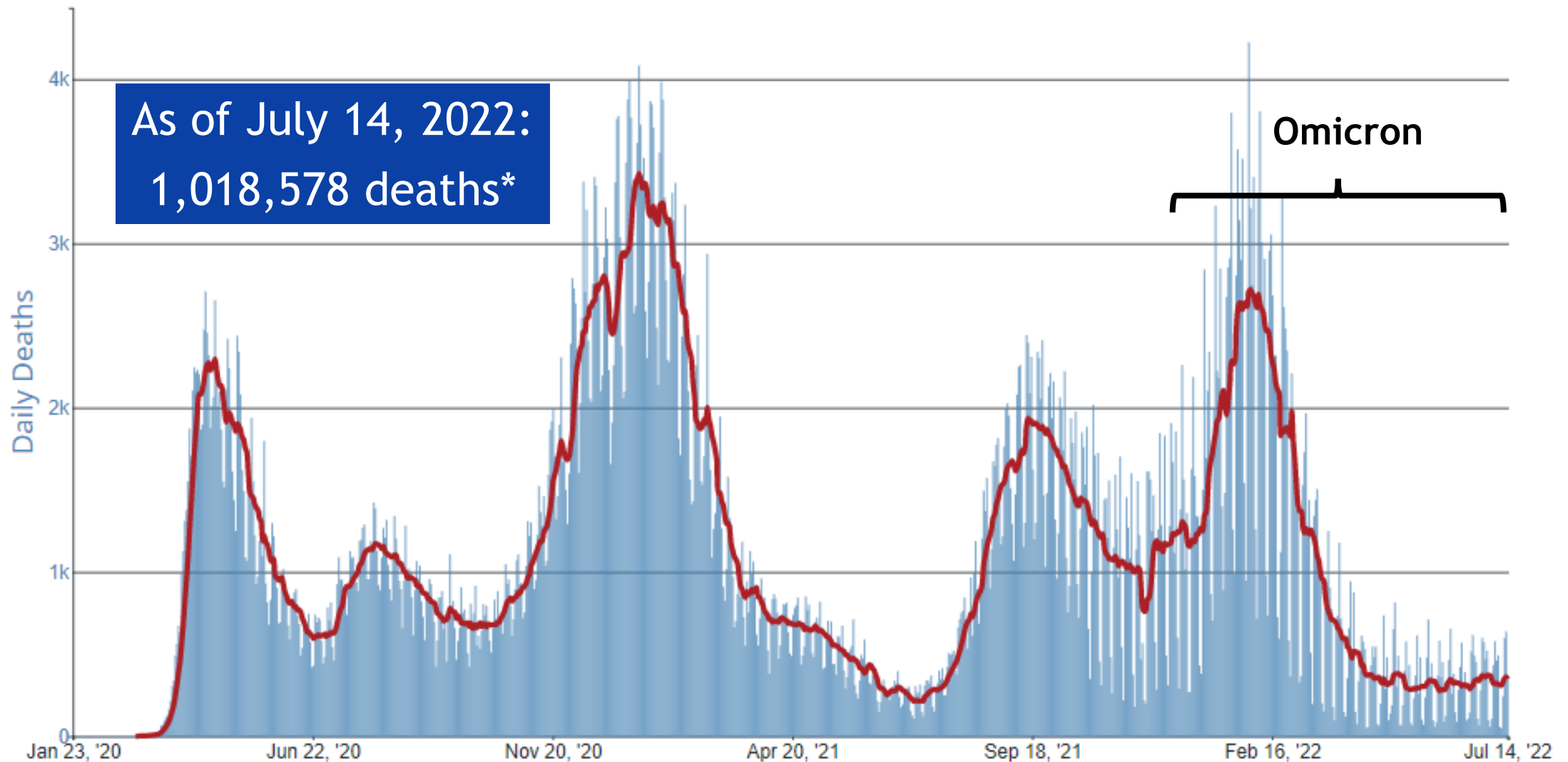
Cumulative Rates of COVID-19-Associated Hospitalizations among Persons of All Ages by Race/Ethnicity, COVID-NET, March 7, 2020 - June 25, 2022



COVID-19 Mortality



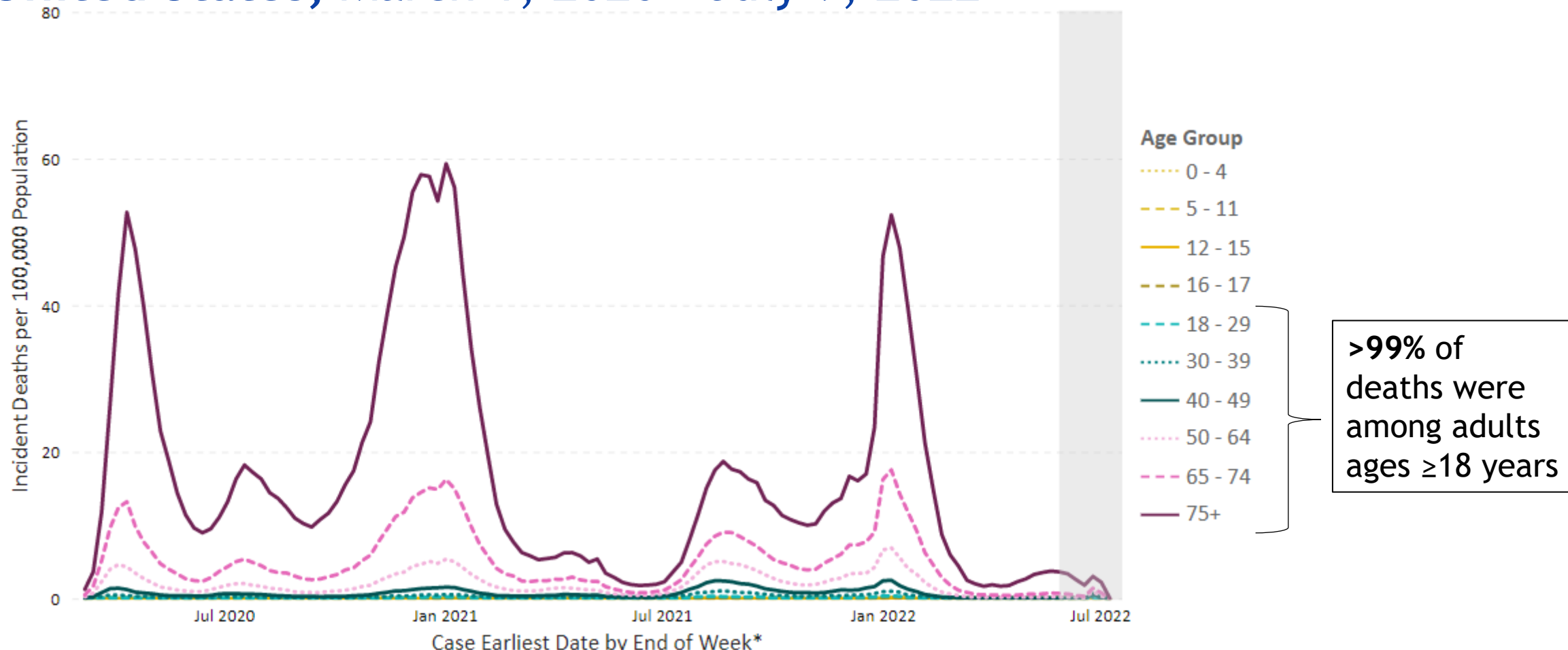
Daily Trends in Number of COVID-19 Deaths, United States



Source: CDC COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#trends_dailydeaths. Accessed July 18, 2022.

*Per National Center for Health Statistics Death Certificate Data: Total number of COVID-19 total deaths as of July 13, 2022, were 1,015,431. https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm#AgeAndSex. Accessed July 18, 2022.

Weekly Trends in COVID-19 Mortality Rates by Age Group, United States, March 1, 2020 - July 9, 2022



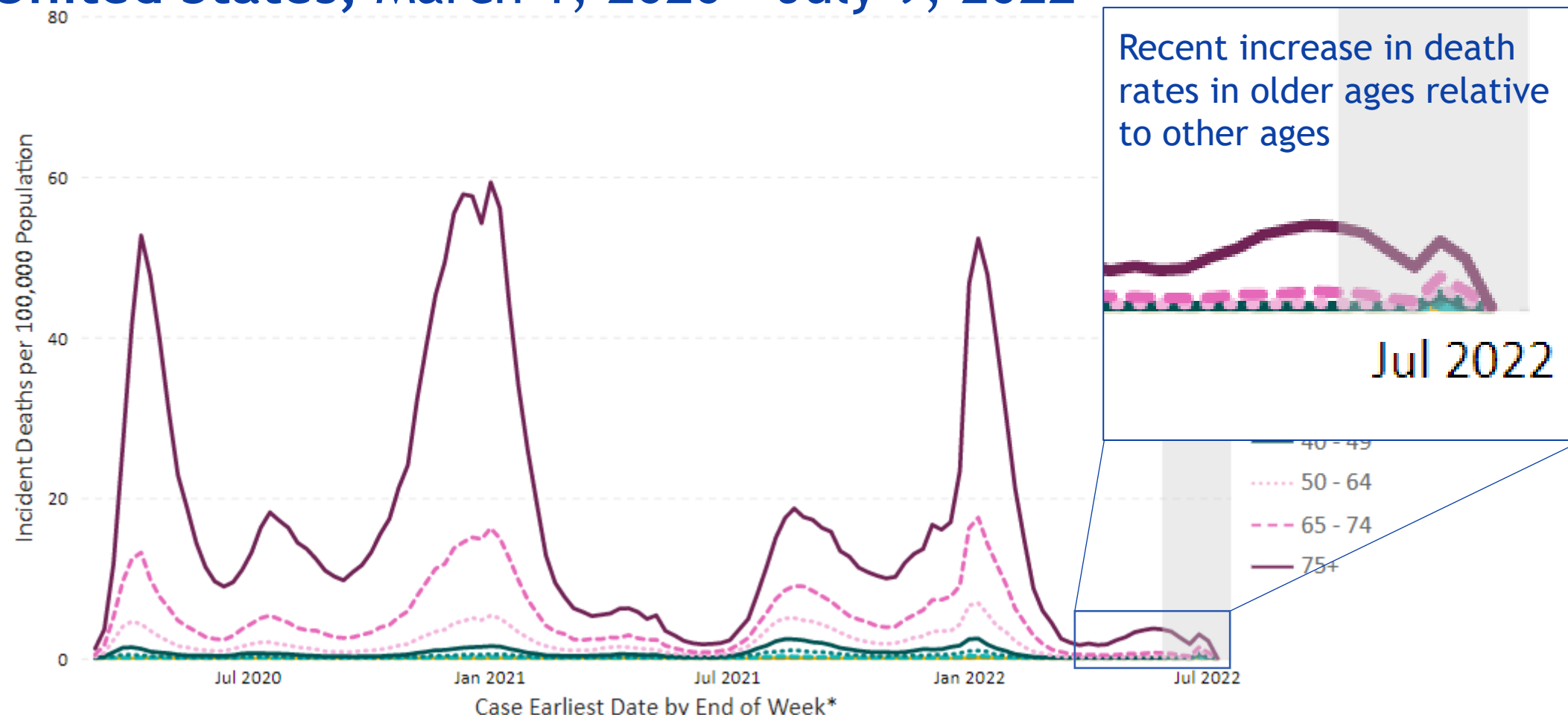
US: The most recent case record was reported during the week ending on Jul 09, 2022. Percentage of deaths among reported cases - 1.09%. Percentage of deaths reporting age by date - 99.91%.

US territories are included in case and death counts but not in population counts. Potential six-week delay in case reporting to CDC denoted by gray bars. Weekly data with five or less deaths have been suppressed. *Case Earliest Date is the earliest of the clinical date (related to illness or specimen collection and chosen by a defined hierarchy) and the Date Received by CDC. The date for the current week extends through Saturday.

Source: CDC COVID-19 Case Line-Level Data, 2019 US Census, HHS Protect; Visualization: Data, Analytics & Visualization Task Force and CDC CPR DEO Situational Awareness Public Health Science Team

<https://covid.cdc.gov/covid-data-tracker/#demographicsovertime> and <https://covid.cdc.gov/covid-data-tracker/#demographics>. Accessed July 11, 2022.

Weekly Trends in COVID-19 Mortality Rates by Age Group, United States, March 1, 2020 - July 9, 2022



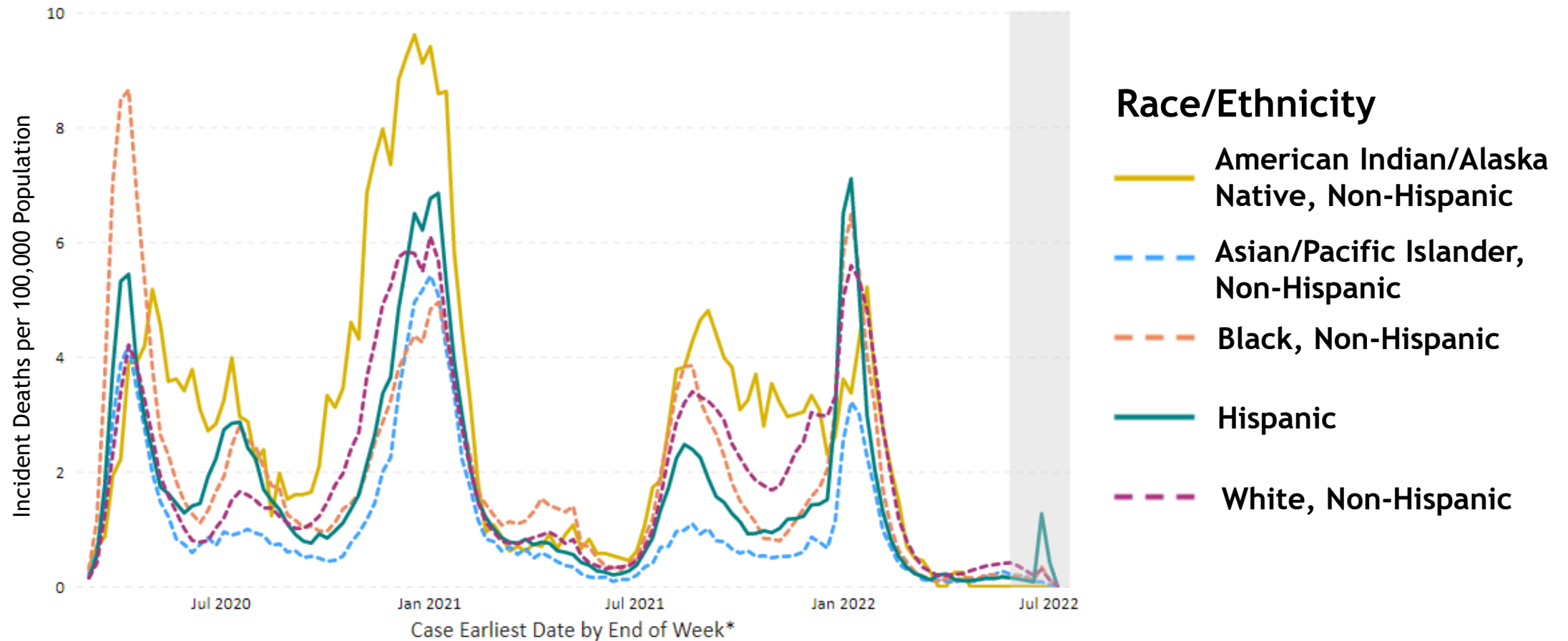
US: The most recent case record was reported during the week ending on Jul 09, 2022. Percentage of deaths among reported cases - 1.09%. Percentage of deaths reporting age by date - 99.91%.

US territories are included in case and death counts but not in population counts. Potential six-week delay in case reporting to CDC denoted by gray bars. Weekly data with five or less deaths have been suppressed. *Case Earliest Date is the earliest of the clinical date (related to illness or specimen collection and chosen by a defined hierarchy) and the Date Received by CDC. The date for the current week extends through Saturday.

Source: CDC COVID-19 Case Line-Level Data, 2019 US Census, HHS Protect; Visualization: Data, Analytics & Visualization Task Force and CDC CPR DEO Situational Awareness Public Health Science Team

<https://covid.cdc.gov/covid-data-tracker/#demographicsovertime> Accessed July 11, 2022

Weekly Trends in COVID-19 Mortality Rates by Race/Ethnicity, United States, March 1, 2020 - July 9, 2022



US: The most recent case record was reported during the week ending on Jul 09, 2022. Percentage of deaths among reported cases - 1.09%. Percentage of deaths reporting race by date - 83.35%.

US territories are included in case and death counts but not in population counts. Potential six-week delay in case reporting to CDC denoted by gray bars. Weekly data with five or less deaths have been suppressed.

AI = American Indian, AN = Alaska Native, NH = Non-Hispanic, PI = Pacific Islander. Excludes cases with unknown or multiple races. *Case Earliest Date is the earliest of the clinical date (related to illness or specimen collection and chosen by a defined hierarchy) and the Date Received by CDC. The date for the current week extends through Saturday.

<https://covid.cdc.gov/covid-data-tracker/#demographicsovertime>. Accessed July 11, 2022.

Risk for COVID-19 Infection, Hospitalization, and Death By Race/Ethnicity, Age-adjusted

Rate ratios compared to White, Non-Hispanic persons	American Indian or Alaska Native, Non-Hispanic persons	Asian, Non-Hispanic persons	Black or African American, Non-Hispanic persons	Hispanic or Latino persons
Cases ¹	1.5x	0.8x	1.1x	1.5x
Hospitalization ²	3.0x	0.8x	2.3x	2.2x
Death ^{3, 4}	2.1x	0.8x	1.7x	1.8x

Race and ethnicity are risk markers for other underlying conditions that affect health, including socioeconomic status, access to health care, and exposure to the virus related to occupation, e.g., frontline, essential, and critical infrastructure workers.

¹ Data Source: Data reported by state and territorial jurisdictions (accessed June 22, 2022). Numbers are ratios of age-adjusted rates standardized to the 2019 U.S. intercensal population estimate. Calculations use only the 66% of case reports that have race and ethnicity; this can result in inaccurate estimates of the relative risk among groups.

² Data source: [COVID-NET](#) (March 1, 2020 through June 11, 2022). Numbers are ratios of age-adjusted rates standardized to the 2020 US standard COVID-NET catchment population. Starting the week ending 12/4/2021, Maryland temporarily halted data transmission of COVID-19 associated hospitalizations, impacting COVID-NET age-adjusted and cumulative rate calculations. Hospitalization rates are likely underestimated ([link](#)). As of June 11, 2022, this situation remains unchanged.

³ Data Source: National Center for Health Statistics provisional death counts (<https://data.cdc.gov/NCHS/Provisional-Death-Counts-for-Coronavirus-Disease-C/pj7m-y5uh>, data through May 29, 2022). Numbers are ratios of age-adjusted rates standardized to the 2019 U.S. intercensal population estimate.

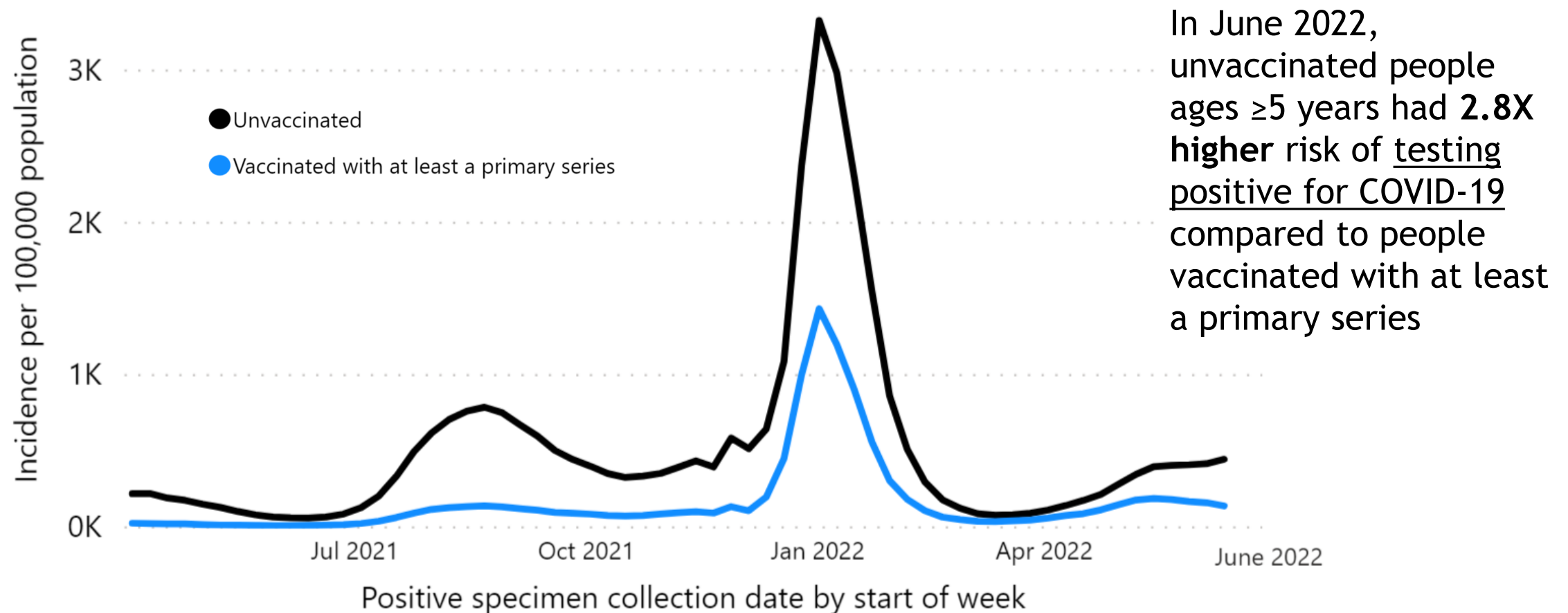
⁴ Data on COVID-19 deaths comes from the National Vital Statistics System (NVSS). The NVSS COVID-19 surveillance webpages and data file updates are paused between June 6, 2022 through June 21, 2022. COVID-19 data updates are expected to resume on June 22, 2022.

<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html>. Updated June 24, 2022 and accessed July 14, 2022.

COVID-19 Disease Trends by Vaccination Status

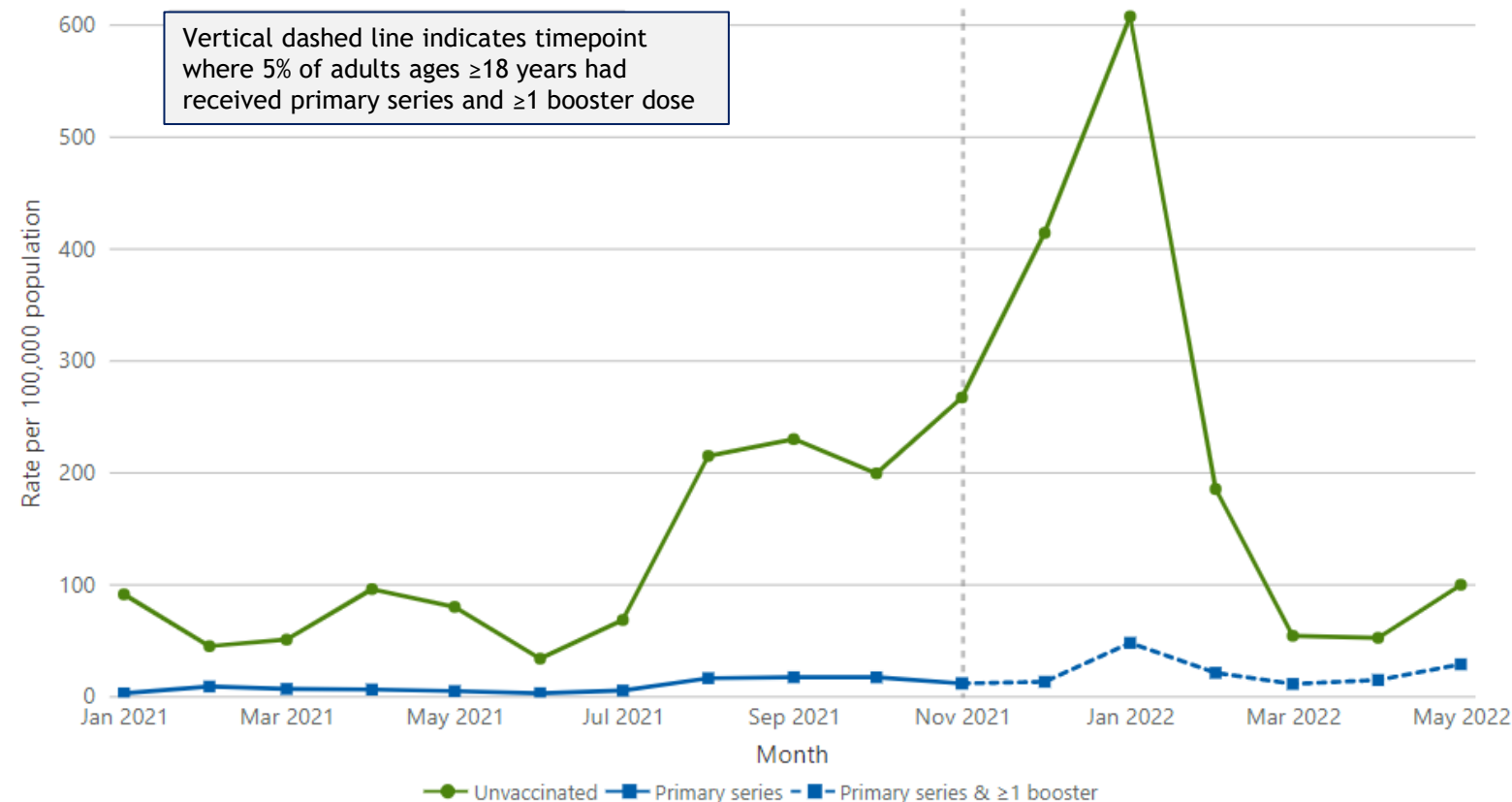


Age-Adjusted Rates of COVID-19 Cases by Vaccination Status in persons ages 5 years and older, April 4, 2021–June 18, 2022 (31 U.S. Jurisdictions)



Age-Adjusted Rates of COVID-19-Associated Hospitalization by Vaccination Status in Adults Ages ≥ 18 Years

January 2021-May 2022

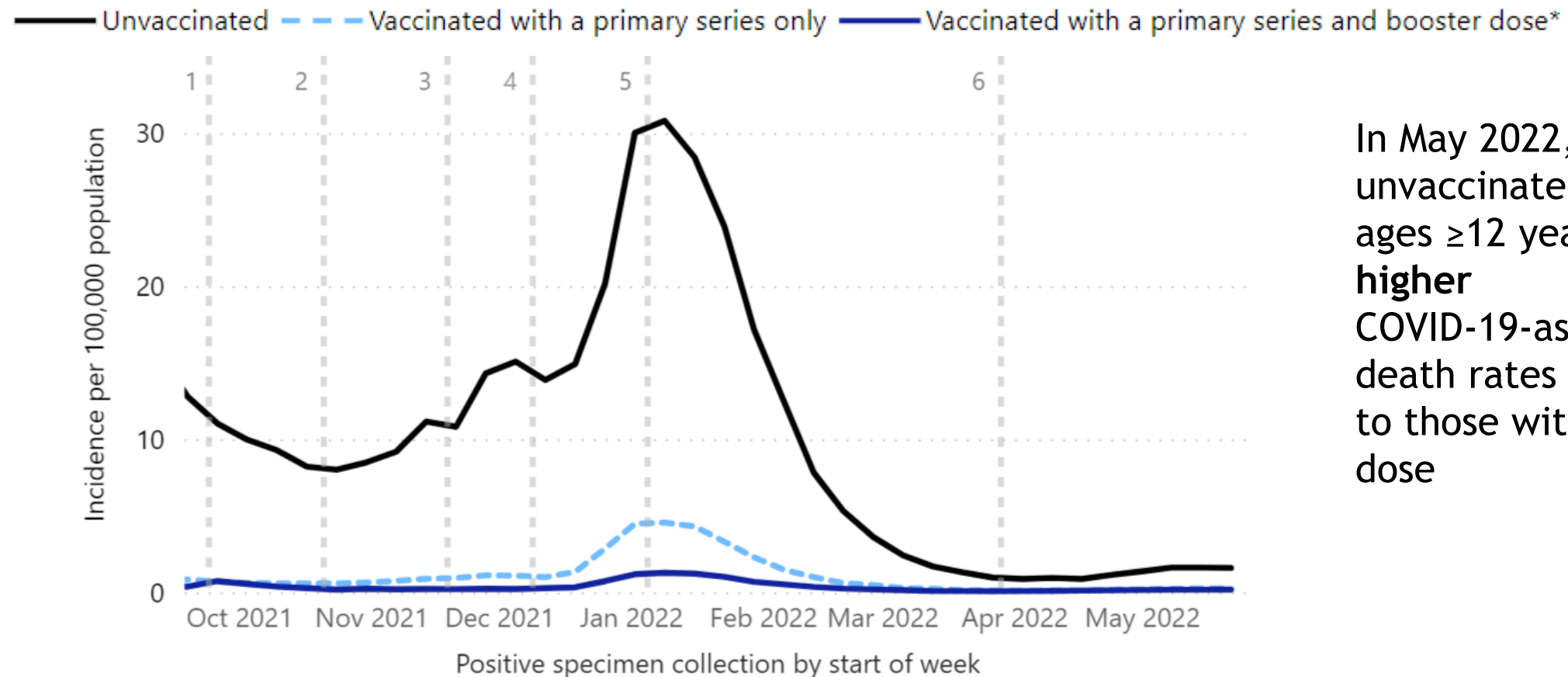


In May 2022, unvaccinated adults ages ≥ 18 years had **3.5X higher risk of COVID-19-associated hospitalization** compared to people who have received a primary series and ≥ 1 booster dose

These data were posted on June 23, 2022 and reflect hospitalizations through May 2022.

Note: "Primary series" refers to hospitalized patients who have completed their primary COVID-19 vaccination series regardless of whether or not they received a booster or additional dose. "Primary series & ≥ 1 booster" refers to hospitalized patients who have completed their primary COVID-19 vaccination series and received one or more additional or booster dose. "Unvaccinated" refers to hospitalized patients with no record of receiving any COVID-19 vaccination. "Up-to-date" refers to persons who have received all doses in the primary COVID-19 vaccination series, in addition to one additional dose or booster dose, when eligible.

Age-Adjusted Rates of COVID-19 Deaths by Vaccination Status and Receipt of Booster Dose,* September 19, 2021 - May 28, 2022 (29 U.S. Jurisdictions)



In May 2022, unvaccinated people ages ≥ 12 years had **9X higher** COVID-19-associated death rates compared to those with a booster dose

*This includes people who received booster doses and people who received additional doses.

Numbers and dashed lines reflect dates of CDC recommendations for booster doses for: 1. Pfizer-BioNTech recipients ages ≥ 65 years, in certain populations, or in high risk occupational or institutional settings, 2. Janssen recipients ages ≥ 18 years and Moderna recipients ages ≥ 65 years, in certain populations, or in high risk occupational or institutional settings, 3. all adults ≥ 18 years, 4. including adolescents 16-17 years, 5. all adolescents 12-17 years, 6. 2nd booster for adults ages ≥ 50 years and immunocompromised individuals.

CDC COVID Data Tracker. <https://covid.cdc.gov/covid-data-tracker/#rates-by-vaccine-status>. Accessed July 15, 2022.

Monitoring Rates of Cases, Hospitalizations, and Deaths by Vaccination Status Has Limitations

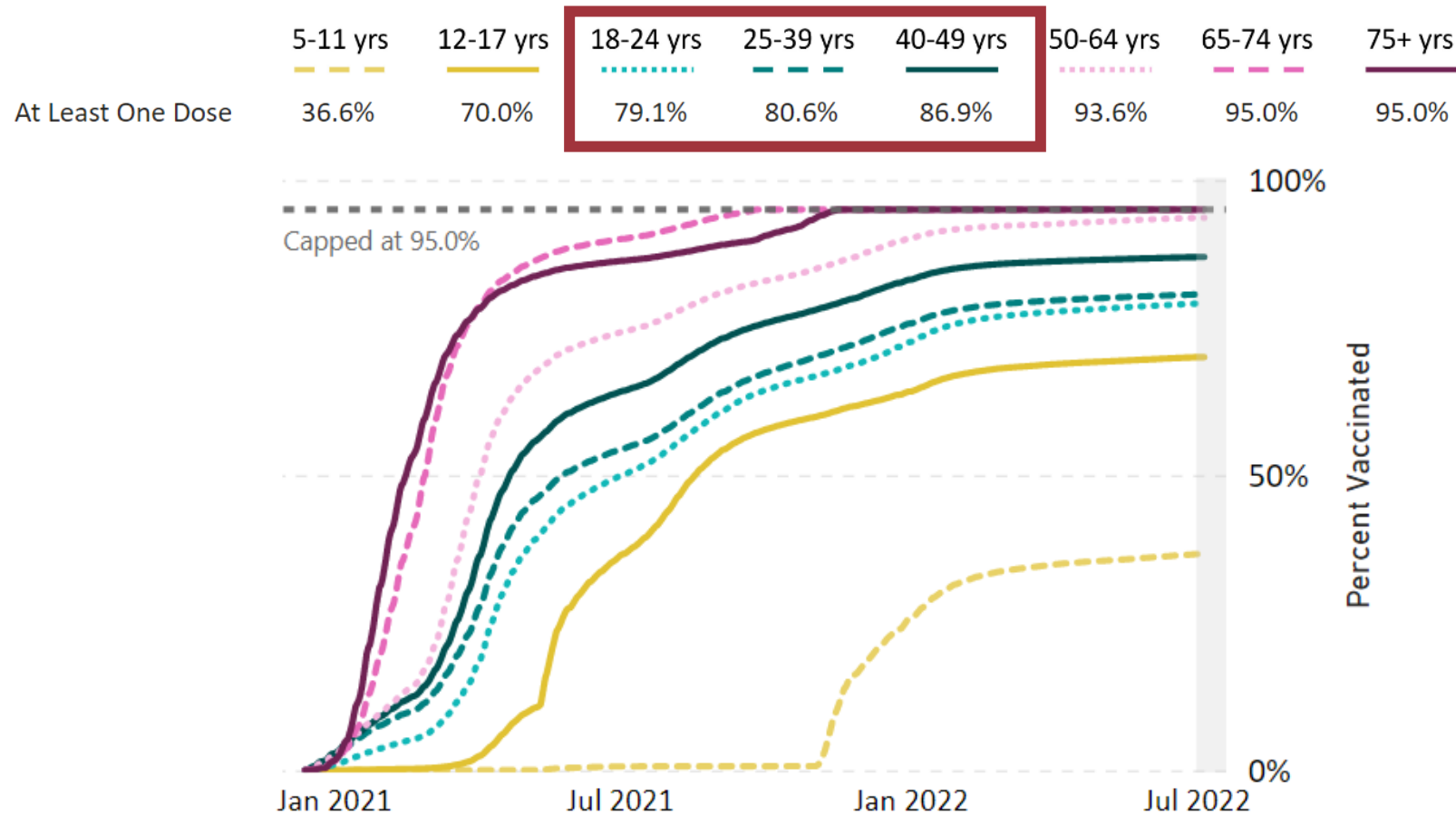
- Vaccine effectiveness studies allow for more robust analyses (i.e., based on extra information collected in defined settings) and a better understanding of how well vaccines are working

Opportunities to increase COVID-19 vaccination rates among US adults

Intent to receive a COVID-19 vaccine will be discussed in a later presentation

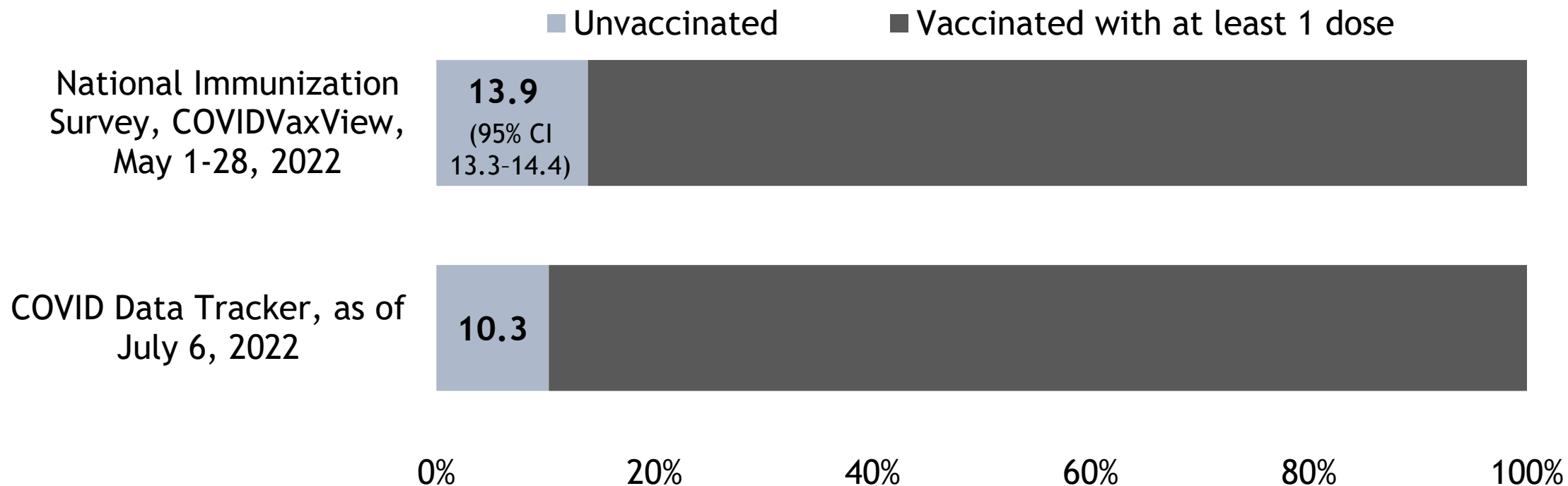


Percentage of People Receiving with at Least One Dose of COVID-19 Vaccine by Age Group and Date Administered, United States, December 14, 2020–July 6, 2022



Due to the time between vaccine administration and when reported to CDC, vaccinations administered during the last 5 days may not yet be reported. This reporting lag is represented by the gray, shaded box.

Percent of U.S. Adults Ages ≥ 18 Years Not Yet Receiving a COVID-19 Vaccine



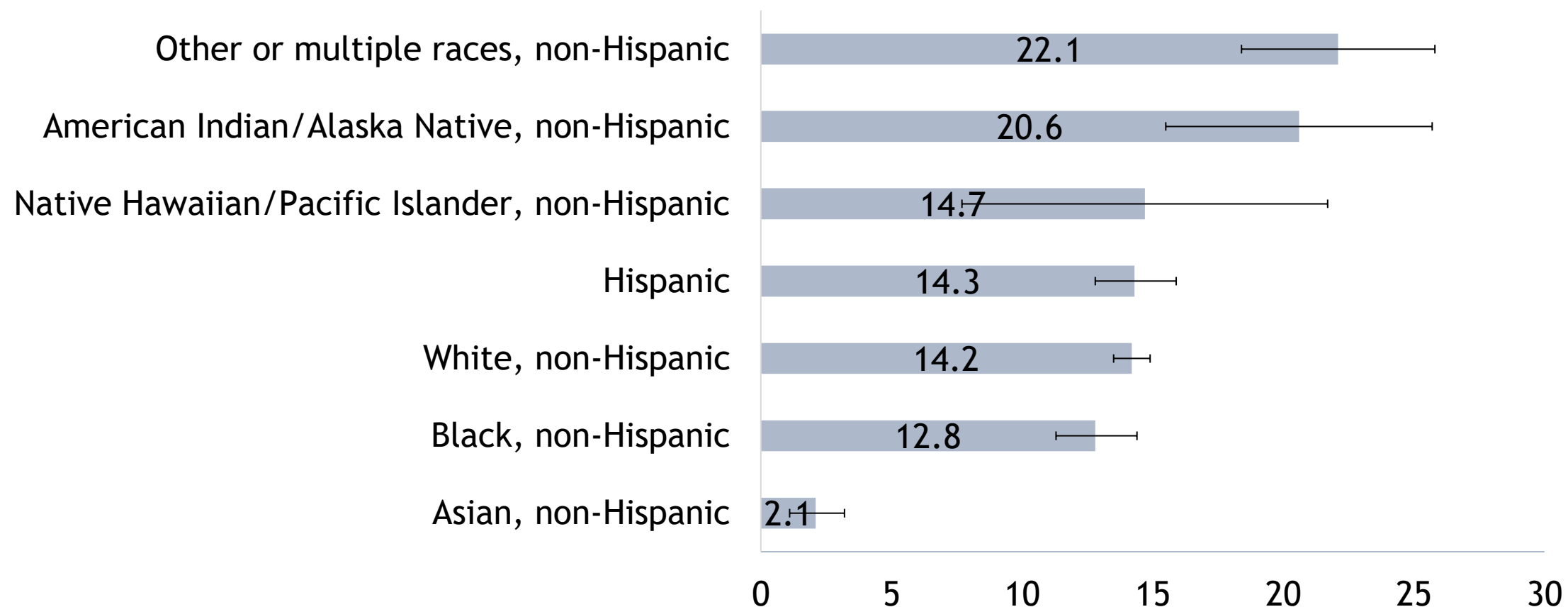
~26-37 million US adults have not yet received a COVID-19 vaccine

CI=confidence interval

COVIDVaxView. Estimates produced by NORC at the University of Chicago using CDC's National Immunization Survey-Adult COVID-19 Module (NIS-ACM). <https://www.cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html>. Accessed July 14, 2022

COVID Data Tracker. https://covid.cdc.gov/covid-data-tracker/#vaccinations_vacc-people-additional-dose-totalpop. Accessed on July 13, 2022.

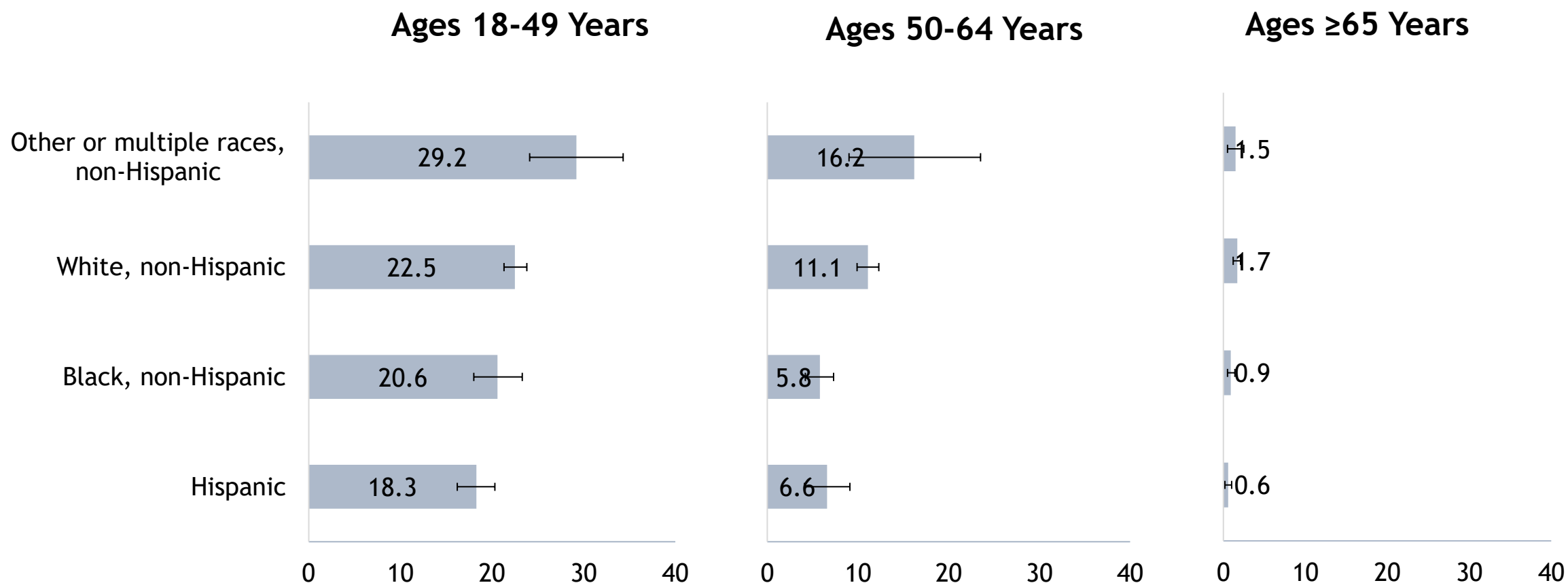
Percent of U.S. Adults Ages ≥ 18 Years Not Yet Receiving a COVID-19 Vaccine by Race and Ethnicity, May 1-28, 2022



95% Confidence intervals shown by error bars

Source: COVIDVaxView. Estimates produced by NORC at the University of Chicago using CDC's National Immunization Survey-Adult COVID-19 Module (NIS-ACM). <https://www.cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html>. Accessed July 14, 2022

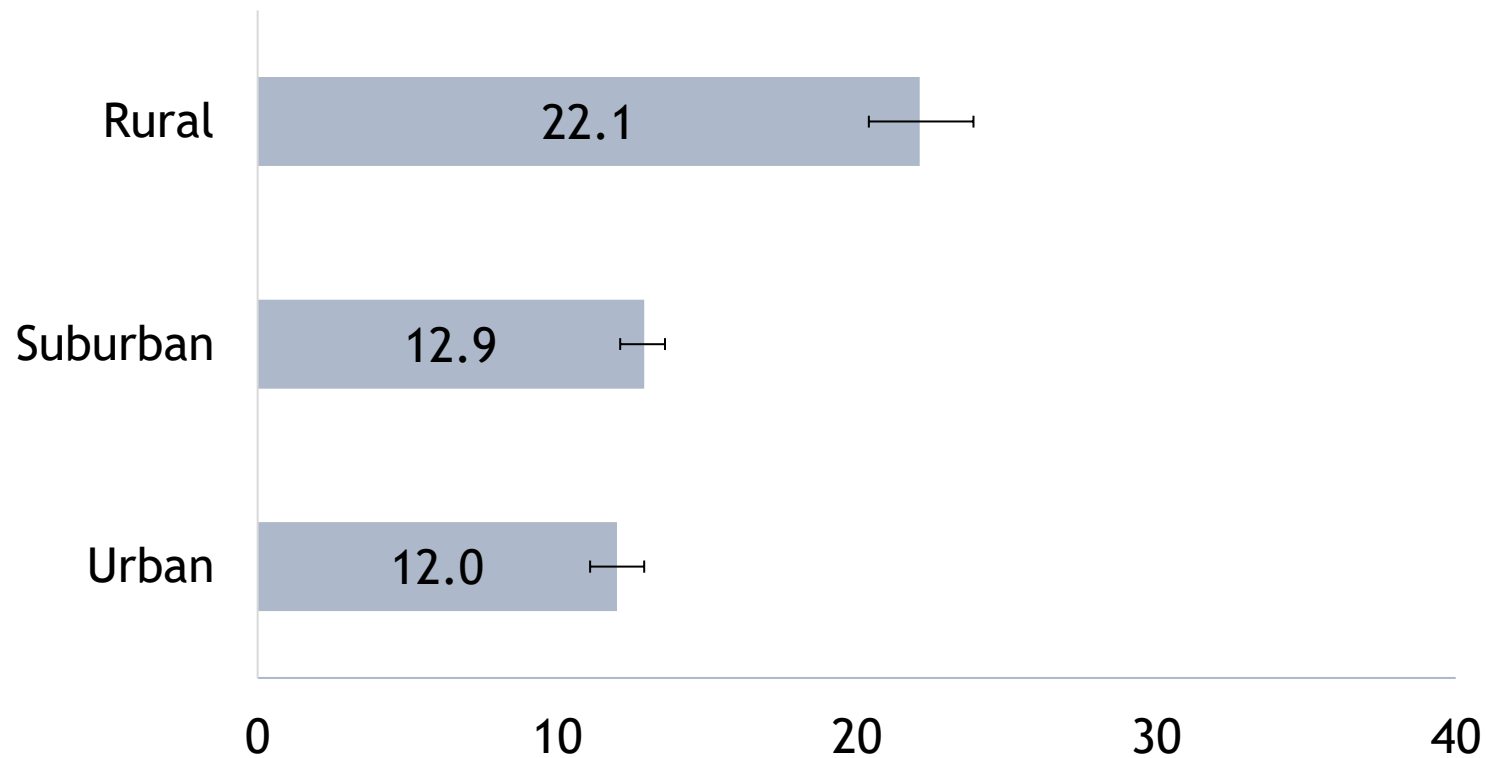
Percent of U.S. Adults Ages ≥ 18 Years Not Yet Receiving a COVID-19 Vaccine by Age Group and Race and Ethnicity, May 1-28, 2022



95% Confidence intervals shown by error bars

Source: COVIDVaxView. Estimates produced by NORC at the University of Chicago using CDC's National Immunization Survey-Adult COVID-19 Module (NIS-ACM). <https://www.cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html>. Accessed July 14, 2022

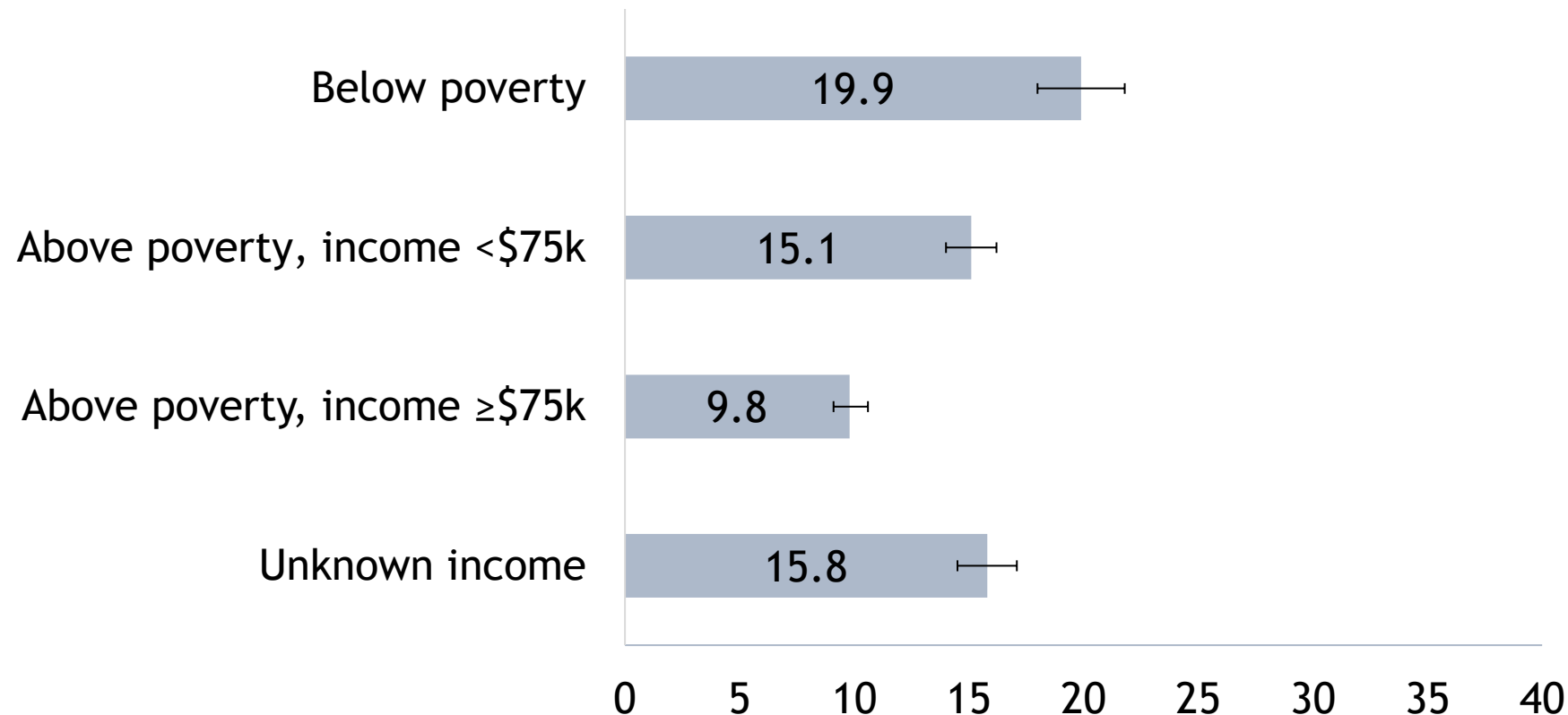
Percent of U.S. Adults Ages ≥ 18 Years Not Yet Receiving a COVID-19 Vaccine by Metropolitan Statistical Area, May 1-28, 2022



95% Confidence intervals shown by error bars

Source: COVIDVaxView. Estimates produced by NORC at the University of Chicago using CDC's National Immunization Survey-Adult COVID-19 Module (NIS-ACM). <https://www.cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html>. Accessed July 14, 2022

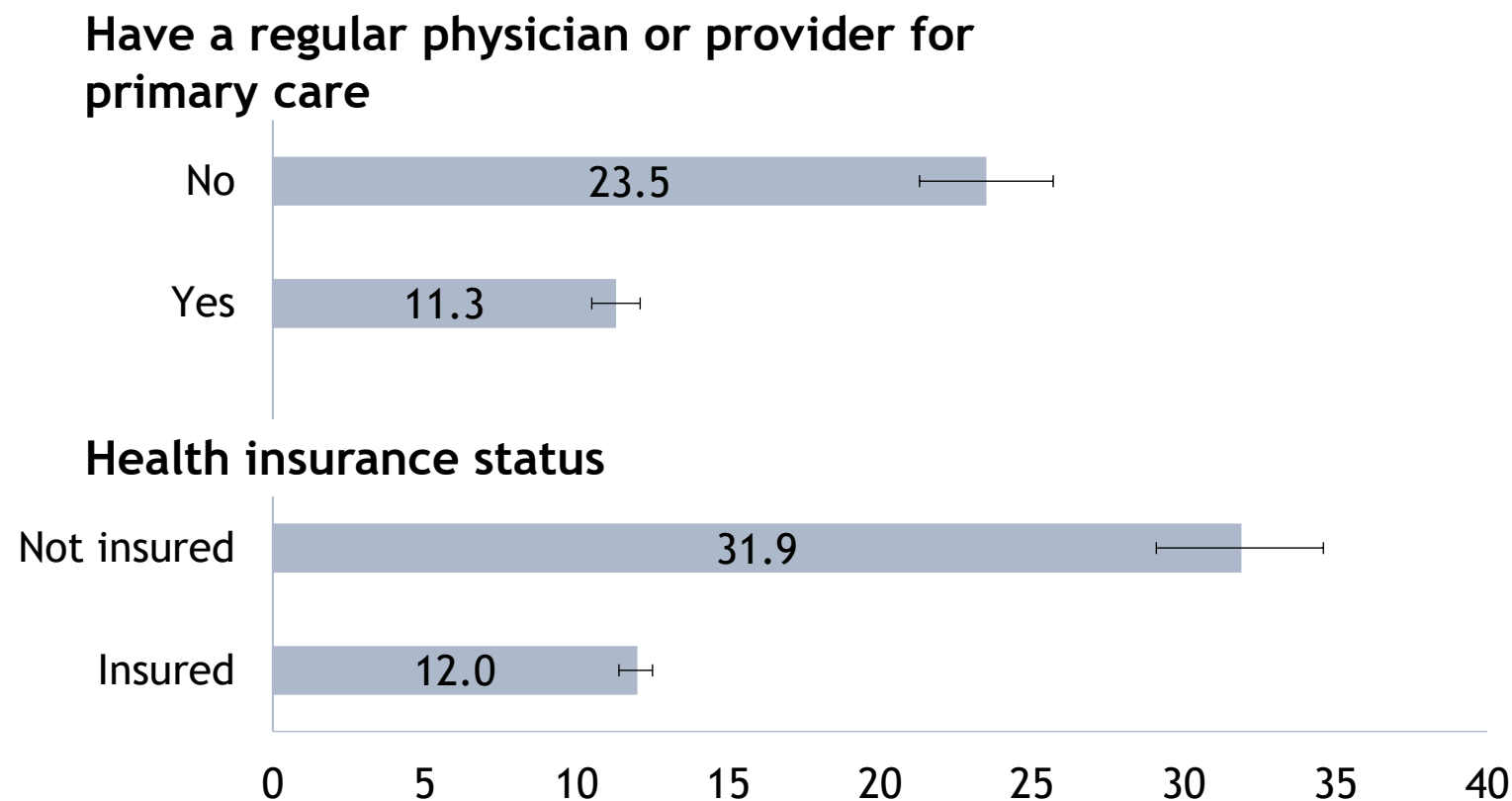
Percent of U.S. Adults Ages ≥ 18 Years Not Yet Receiving a COVID-19 Vaccine by Income and Poverty Status, May 1-28, 2022



95% Confidence intervals shown by error bars

Source: COVIDVaxView. Estimates produced by NORC at the University of Chicago using CDC's National Immunization Survey-Adult COVID-19 Module (NIS-ACM). <https://www.cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html>. Accessed July 14, 2022

Percent of U.S. Adults Ages ≥ 18 Years Not Yet Receiving a COVID-19 Vaccine by Markers of Access to Health Care, May 1-28, 2022



95% Confidence intervals shown by error bars

Source: COVIDVaxView. Estimates produced by NORC at the University of Chicago using CDC's National Immunization Survey-Adult COVID-19 Module (NIS-ACM). <https://www.cdc.gov/vaccines/imz-managers/coverage/covidvaxview/interactive/adults.html>. Accessed July 14, 2022

Conclusions

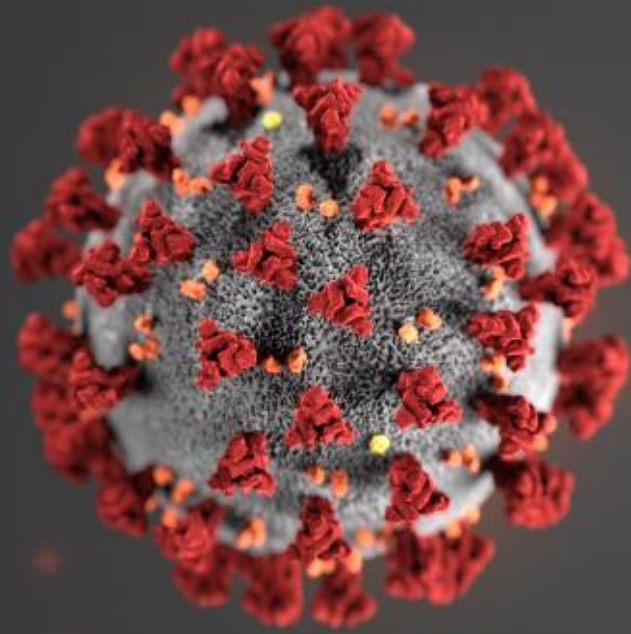


Summary

- As of July 14, 2022, **>89 million COVID-19 cases** and **>1 million COVID-19 deaths** have occurred in the United States
- COVID-19 continues to cause new cases, hospitalizations and deaths
- COVID-19 has contributed to health inequities
 - American Indian/Alaska Native, Black, and Hispanic/Latino persons have been disproportionately affected by COVID-19-associated hospitalizations and deaths
- Vaccination prevents COVID-19 cases, hospitalization, and death
- About 26-37 million US adults have not yet received a COVID-19 vaccine and will benefit from starting a primary series

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- Heather Scobie
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- Melissa Briggs Hagan
- Sarah Meyer
- Vaccine Effectiveness and Policy Team
- Epidemiology Task Force
- National Immunization Survey
- Data and Analytics Visualization Task Force



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

